The Marginal Claim, With Respect to the Requirement of Invention

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Decisions of the courts undoubtedly establish the generic rule that subject-matter, to be patentable, must require invention as distinguished from mechanical skill. That is the answer of the courts to a question of law. They also establish certain rules, viz: the rule concerning double use, that concerning choice of material, that concerning aggroupments of elements, that concerning the substitution of one element for another in an old combination, and others less widely applicable—which are subsidiary to the rule requiring invention, stating classes of cases instead of merely individual cases in which invention is or is not found. I cite these subsidiary rules, which are all familiar. Decisions relating directly and in terms to the distinction between invention and mechanical skill are also familiar. The marginal claim presents a question to the decision of which no one of the subsidiary rules is by itself unmistakably applicable or adequate. We are therefore driven back to the fundamental rule requiring invention, to be employed as a guide in the application of, or instead of, the subsidiary rule. Further, since neither the presence nor the absence of invention unmistakably appears without further inquiry, we are driven back to consideration of the grounds for the distinction between invention and mechanical skill.

What *is* invention in the sense of the patent law? That is a question of fact arising in consequence of the interpretation of the law. Nearly related to it is the extra-legal question, what is invention irrespective of the patent law, and not confined to the useful arts? If a satisfactory

answer to the latter question can be found it may throw light upon the former. But in considering it we have to remember that any conclusion reached can not alter the meaning of the law as interpreted by competent legal authorities, however it may aid us in comprehending that meaning.

The definition of invention which can be derived from the decisions is the definition of its antithesis, mechanical skill, as the devising of what can be devised by a person ordinarily skilled in the art from his knowledge of the art, anything otherwise patentable which can not be so devised being patentable invention. This leaves what can be accomplished by mechanical skill undefined, to be determined by experience. Supplementary to this definition we find in the decisions examples of invention and of mechanical skill, and we find definitions or partial definitions of certain classes of subject-matter which are one or the other, and we find some statements concerning the character of invention. It has been said that invention is the exercise, or the result of the exercise, of the inventive faculty, which would be a direct definition of invention if we had an authoritative definition of the inventive faculty. The ordinary double use, the ordinary substitution of material, the aggregation, the substitution for an element in a combination of its equivalent element, are not inventions; the exceptional double use, the exceptional substitution of material, the true combination, the substitution for an element in a combination of another element not its equivalent, are inventions.

Upon reviewing the examples of invention passed upon, it can be readily seen that each is the material embodiment or physical expression of an idea of an adaptation or adjustment of means to ends. The patentable machine, article, substance, or process is patentable because of its suitability to perform a certain useful function, additional conditions being satisfied. The inventive idea embodied or expressed in each involves the idea of means, which I take to be the idea of the thing, or of the act or series of acts in a process, plus the idea of its employment for a useful purpose. Upon reviewing examples of mechanical skill we find that they also are essentially adaptations or adjustments of means to ends, each involving an idea of means. Both invention and

mechanical skill consist essentially of the adaptation or adjustment of means to ends. If we look beyond the range of the patent law, seeking the character of what may be called either invention or skill in human affairs generally, examining them simply as practical experience, we soon perceive that the adaptation or adjustment of means to ends is the vital feature of all rational human activity. How then is patentable invention to be distinguished from mechanical skill, or from anything which any person can rationally do? Perhaps by the term "original," defining invention as original adaptation or adjustment of means to ends. But if we apply thorough analysis to the various instances of adaptation or adjustment of means to ends, mechanical or other, we shall find that an element of originality is embraced in every one of them. All human activity is, to some greater or less extent, original. Of course, in many instances the element of originality would be regarded by any instructed person as negligible in the application of the patent law. But at what point in the series of instances does that element become significant?

Invention, defined merely by examination of practical experience and without reference to the interpretation of the patent statute, appears to be any rational adaptation or adjustment of means to ends. Such examination shows that the inventive faculty is simply the faculty of thinking, which may have a so-called "creative" or a merely adaptive character, applied to the adaptation or adjustment of means to ends. To interpret the term "invented" in the statute as including all which lies within this fundamental concept of invention and also within the field of patentability would make the statute absurd, because it would apply to the most commonplace act of any mechanic which happened to be new according to the most minute analysis. Obviously the legislators had in mind inventions which differed from what was before known to some substantial degree. But what constitutes a substantial degree of difference?

The essential character of a patent is that of a contract under which the inventor is given the exclusive right to make, use, and sell certain carefully defined things or processes in which his inventive idea is embodied or expressed for a given period and the inventive idea will be

free to the public after the expiration of that period. Grant *vs.* Raymond, 6 Peters, 218. Thus the public buys the invention. But there is no reason for the public to buy the invention if already in possession of it. Therefore the law says that the invention must be new to be patentable. There is no reason for the public to buy the invention if it be potentially in possession of it. The public is potentially in possession of the invention if it be within the reach of its ordinary resources, irrespective of the effort of any given inventor. That occurs when the invention lies within the reasonably expectable improvement of the art which is incidental to its ordinary intelligent practice. Here we find the reason for making a distinction between invention and mechanical skill. In view of the mode of payment, the public can afford to buy, and ought to pay for if it uses, any invention offered which is not already in its possession, actually or potentially. The nimble anticipator of the incidental improvement has nothing to offer the public which the public needs, or in justice ought, to buy. Atlantic Works *vs.* Brady, 23 O. G., 1330; General Electric Co. *vs.* Winona Interurban Railway Co., 170 O. G., 706.

From the reasoning herein adopted it appears that every rational adaptation or adjustment of means to ends is an invention according to the untechnical definition of the term, that if any such invention be new and useful and lie within the field of patentability it is patentable unless it comes within the restriction upon patentability imposed by the authoritative interpretation of the law, and that that restriction consists in the requirement that the invention must transcend the reasonably expectable improvement in the arts which is incidental to their ordinary practice.

The difficulty presented by the marginal claim resides especially in estimating the reasonably expectable incidental improvement, which is the indefinite factor of the problem. Involved in this is the difficulty of estimating the value of differences which are neither palpably substantial nor palpably negligible. The difficulty can not be entirely eliminated; perhaps it can be cornered into some narrowly restricted field of thought.

Two comparisons are involved in the decision. The first is between what is stated in the claim and what is

found to actually exist in the prior art. In this comparison we have two definite terms, and the difference between them can be definitely found. The second comparison is between that difference and the expectable incidental improvement, and in that comparison the second term is not definitely given.

Every adaptation or adjustment of means to ends, from a great product of inventive genius such as the wireless telegraph to, say, the process of building a box, has three factors, viz: the means employed, the end accomplished or function, and the relation of utility which subsists between the means and the function. By function, I mean the immediate function, not some ulterior utility. This analysis is gross, but I think it covers the ground in a generic sense. Neither means nor function is always quite simple, and the relation of utility may admit of analysis into elemental relations. Sometimes the immediate function is so associated with the ulterior purpose that it can not be perfectly appraised until that purpose has been taken into account. Either factor may be found in the first comparison to be actually new, to some greater or less degree. We have to find by the second comparison whether the novelty is substantial, i. e., required invention, i. e., transcends the expectable incidental improvement. If the means, which may be an individual thing or act or a combination of things or acts, be substantially new, we have the most common case of patentability. If the means be not substantially new, but the function be substantially new as compared with any function known in the prior art, we have the case of an invention which is undoubtedly patentable under the rule concerning double use. If the means be old, and the function also be old but only as the function of some other means, we have to consider whether the relation of utility thus presented is substantially different from the relation of utility disclosed in either the nearest reference showing the means or the nearest reference showing the function. This case necessarily involves some difference between the relation of utility in the invention claimed and the relation of utility in any prior invention. If that difference be found substantial, we have the case of patentability under the rule concerning double use, or, what comes to the same thing in particular classes of cases,

under the rule concerning substitution of material or that concerning the substitution of one element for another in a combination. The substitution of an old material or element is the double use of that material or element for a function new in its use, but in itself old, viz: the function of the material or element which it replaces. If either means or function be new, there is necessarily actual novelty in the relation of utility. Thus in every instance of actual novelty there is some novelty in the relation of utility. That relation is the characteristic feature of an adaptation or adjustment of means to ends. In one of the three classes of cases some novelty in that relation necessarily exists. Can we make substantial novelty in that relation the test of patentability in all three classes of cases? We can if substantial novelty in either means or function necessarily implies novelty which is substantial in the relation of utility. When there is decided novelty in the means there can scarcely be doubt of substantial novelty in the relation of utility. In the doubtful case a trifling novelty in the means is found. We have to decide upon cases in which the novelty in the means, considered merely as a novelty in structure, or in an act or series of acts, is of little or no consequence and clearly unsubstantial, but in which if we consider the thing or act not merely as a thing or act but with reference to its function, the novelty found is appreciable and may support the conclusion of patentable invention. If we find that it does support that conclusion we find substantial novelty in the means dependent upon substantial novelty in the relation of utility and make the latter the decisive test. I believe that to be the principle which will explain, and render consistent with the general tenor of decisions, the entire series of decisions in which means have been found patentable when the novelty residing therein appears to be insignificant. But is not substantial novelty in the relation of utility always the decisive test of the patentability of novel means, although we do not always find it necessary to give special attention to the point? A novel means is patentable *because* of its suitability to perform a certain function; in other words, because of the relation of utility. Substantial novelty in the relation of utility is precisely what makes the novelty of the means substantial. If there be any claims to which that test

is not applicable the so-called purely structural claim is one; i. e., the claim which states a device of old kind performing the function performed by all devices of that kind but having an improved construction, the novelty being of no consequence to that function, but having a collateral utility, say cheapness. In that case we must consider the feature or features of novelty in relation to the collateral advantage, which is its or their function. I do not think that we can find the construction patentable without finding substantial novelty in the relation of utility between the novel feature or features and the collateral advantage. The dependence of the patentability of an adaptation or adjustment of means to ends in which only the function is new upon the substantial novelty of the relation of utility is, in my view, not more real, but more readily obvious.

I believe that the solution of the problem presented by the marginal claim can be reduced to a comparison of relations of utility. In support of that conclusion, and of the view herein taken of the bearing of the fact that a patent is essentially a contract, I cite the lectures delivered last winter before the law class of Georgetown University by Commissioner Ewing.

But what novelty in the relation of utility is necessary to transcend the expectable incidental improvement? Perhaps we shall find that the mere location of the essential novelty in that relation goes far to answer that question.

It is, very fortunately, true that the generality of men, working more or less together, can apply what they know to useful purposes in very multifarious ways. Thus is the business of human life carried on in all fields of activity, including the practice of the useful arts. Mechanical skill can apply its knowledge with indefinitely extended variation in the mere association of items of that knowledge. The mechanic, or the educated engineer or designer, may usefully apply in practice known facts in indefinitely extended multiplication and permutation without transcending the expectable incidental improvement. In that a certain measure of ingenuity and originality is involved.

The independently definable items of knowledge within the field of patentability concern things or acts which

may become means, and desired ends which may become functions of means. That knowledge also includes associations of means with functions in known ways. Mechanical skill can, and constantly does, variously associate known means with known means, and known functions with known functions, in unitary operations or in the service of single ulterior purposes, according to circumstances. If it also associates a known means with a known function in a new association but in a known way of associating it is still only intelligently selecting and applying, according to circumstances, the known resources of the art. Obviously the elements involved in all the possible permutations include means, functions and relations of utility, and if all the elements involved in a given association are known we have in it only what mechanical skill can accomplish, according to experience in all human activity. It is also clear, both according to that experience and according to the decisions in patent cases, that an actual novelty which lies within mechanical skill may exist in an element of either kind.

But if the inventor has produced a new means, or has discovered a new function, or has employed an old means for an old function according to a new mode of association, the novelty in each instance being more than negligible, he has, according to experience in human activity in general, transcended mechanical skill however well instructed it may be. The pertinent lessons of experience, contemporaneous and historical, in all fields of human activity, are, the facility with which permutations of items of established knowledge can be effected, and the difficulty, sometimes astonishing after the fact, which attends the discovery and establishment of any, even a small, really new item. In the latter experience the so-called "creative" character of thinking appears.

Aside from combinations, either a means or a function which is substantially new upon its own account is rare. If either be presented a substantially new relation of utility is sure to exist somewhere. The collateral question as to where the invention resides, in a choice of new material or in the material itself, in an aggroupment of elements one of which is new or in that element itself,

and so on, may be answered by finding the new relation of utility. In the general run of cases, including combinations and aggregations, the things or acts which may become means or elements in means and the desired ends which may become functions are items, often familiar, in preestablished knowledge. The substantial novelty, if any, resides in the association of those things or acts in a combination, or in the association of the means with the function. According to general experience in human affairs, including experience in the useful arts, if either association be mere association, involving only the application of two or more items of knowledge, or a mere copying of some analogous association, it lies within the range of mechanical skill, otherwise not. Let us see if this agrees with the rules established by decisions.

Under the rule concerning aggroupments of elements, when the unifying relation between the elements grouped is nothing more than that of mere association, so that the aggroupment produces no other result than the use together of those elements, each performing its usual function and no more, the aggroupment is not patentable. The fact of association as well as the elements associated may be embodied in a unitary structure or expressed in a unitary series of steps without avoiding the rule, as in Reckendorfer *vs.* Faber, 10 O. G., 71. But when the aggroupment establishes a unifying relation between the elements which embraces something more than mere association, so that the function of the aggroupment is something other than the mere sum of the functions of the elements as they might separately act, whereby what is sometimes called a new mode of operation is introduced, the differences from the prior art not being negligible, the aggroupment is patentable. I take it that such is the rule whatever analysis of any given instance may show to be the character of that in the unifying relation in that instance which distinguishes it from mere association. Thus in the patentable combination a new relation of utility is introduced, which makes it a substantially new means. As being in harmony with this view, I cite *Ex parte* McCullom, 204 O. G., 1346.

Under the rule concerning the substitution of one element for another in an old combination, when the element substituted is an equivalent for the element re-

placed, an equivalent being a device known to have, or obviously having, the function which the element replaced has in the combination, the resulting new combination is not patentable, but when the element substituted is not an equivalent, the new combination is patentable. In the former case no new item is added to knowledge. In the latter case a new item is added, it being the knowledge of the relation of utility between the substituted element and its function in the combination.

The rule concerning the substitution of materials is parallel to that concerning the substitution of elements, its peculiarities being only such as result from the character of the combination and its ingredients.

The rule concerning double use has reference to cases involving only the novel association of means and ends. The association is unpatentable when it does not, but is patentable when it does, add a substantially new item to knowledge. The latter may occur when the function is substantially new, or when the function is old but the relation of utility is nevertheless substantially new.

I have not described or defined the relation of utility beyond the implied statement that it is the relation subsisting between two terms, means and function, when they are associated and utility results from the association. I think that we should rest upon that definition, without undertaking any more particular description as necessarily applicable in all cases. The relation of utility appears in some discussions of combinations and aggregations as "mode of operation," and that description seems apt in the cases in which it is employed. Perhaps thorough analysis would show that it might be applied in all cases. Every thing or act employed as a means or as an element in a means is so employed because of some natural property which it possesses which renders it capable of use for performing some action, or for some purpose which is useful with reference to an action. That property may be called its mode of operation, or its contribution to the mode of operation of a combination in which it is an element. But it may be doubted whether that description is fairly applicable in every instance of patentable double use or substitution. Does every *new* relation of utility involve a *new* mode of operation of something? If we should find a substantially new

relation of utility according to the broader definition which did not involve a new mode of operation we would nevertheless find patentable invention.

The degree of novelty in the relation of utility which is necessary to confer patentability is the element in the problem which is not reducible to general rule. It must be substantial, not negligible. It must be distinguishable from mere association of its terms by constituting an item of knowledge not attainable in the course of the incidental improvement of the art. If the solution of the problem presented by the case in hand can be run to cover by an application of generic rules based upon sound analysis of the general topic, it can only be finally caught by the exercise of specific judgment addressed to the individual case.

This paper is submitted in the conviction that it contains a sound, and I hope a useful, generalized interpretation of all the decisions which pertain to patentable novelty, reading each in comparison with the others and in view of the facts to which it was applied. In my view they are all pertinent as illustrations. They all follow a substantially uniform line of reasoning, variously applied to individual cases. An excellent selection, with analyzing discussion, is contained in Mr. Tucker's paper on "Invention *vs.* Mechanical Skill." I regard as especially instructive the decisions relating to double use, and those in which slight novelty in means was found patentable because of distinguishing novelty in function, which must, of course, be read in comparison with others in which an adverse conclusion was reached. I cite below a few decisions deemed especially in point as illustrations, viz: Ex parte McCullom, supra; Atlantic Works *vs.* Brady, supra; Webster Loom Co. *vs.* Higgins, 21 O. G., 2031; McClain *vs.* Ortmayer & Son *et al.*, 42 O. G., 724; Ansonia Brass & Copper Co. *vs.* Electrical Supply Co., 58 O. G., 1692; Topliff *vs.* Topliff, 59 O. G., 1257; Potts *vs.* Creager, 70 O. G., 494; Consolidated Electric Mfg. Co. *vs.* Holtzer, 72 O. G., 415; Mast, Foos & Co. *vs.* Dempster Mill Mfg. Co., 82 O. G., 338; Hobbs *vs.* Beach, 94 O. G., 2357; Westinghouse Electric Mfg. Co. *vs.* Allis-Chalmers Co., 158 O. G., 482; Diamond Rubber Co. *vs.* Consolidated Tire Co. and Rubber Tire Wheel Co., 166 O. G., 251; *In re* Moulton and Jones, 191

O. G., 588; National Tube Co. *vs.* Mark et al., 209 O. G., 329.

I suppose that the words "invented or discovered" in the statute were intended to designate an act which has, in its intellectual aspect, the character called by Robinson "creative" in contradistinction to "merely imitative." The statute must always be construed as applying to the things and acts designated in it. Experience may improve our understanding of the natural character of those things or acts. Since the first patent statute was enacted we have had an enormous amount of pertinent experience, in which improvements requiring but a moderate degree of ingenuity bulk large, and in which the very great aggregate value of such improvements, and their dependence upon something more than what is incidental to the intelligent practice of the arts, are shown. That experience also throws a strong light upon the natural character of the act of invention which the statute designates. I believe that, in the light of accumulated experience, we can see that the creative activity designated by the statute amounts to invention in the fundamental sense herein stated minus the expectable incidental improvement, and that it is manifested when a substantially new item of knowledge is embraced in its result. Clearly, the legislators were vastly more interested in the improvements which inventors would achieve than in the character of the mental process required for the achievement. I think that the minds of the legislators and the minds of the judges came together upon the proposition that what is not mechanical skill is invention, and that mechanical skill is but another name for the expectable incidental improvement.

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